

AMENDMENTS TO THE SPECIFICATION

At page 1, immediately before paragraph 0001, please insert the following :

Reference to Related Applications

This is the U.S. national stage, under 35 U.S.C. § 371, of international application no. PCT/GB2004/001694, having an international filing date of April 19, 2004, and claims priority to British application no. 0308938.0, filed April 17, 2003.

Field of the Disclosure

At page 1, please amend paragraph 0001 as follows:

The present invention disclosure relates to a sensor for use in a medical training system.

At page 1, immediately before paragraph 0002, please insert the following heading at the left-hand margin:

Background of the Disclosure

Beginning at page 1, and continuing at page 2, please amend paragraph 0005 as follows:

In order to examine large numbers of medical students during a session or a day, a system called Objective Structured Clinical Examination (OSCE) has been established. Multiple patients are required for days on end within the Clinical Skills environment. If the skills to be examined are invasive, it is not only expensive but restrictive to use actors or volunteers as patients. Over the years actors, models, volunteers or fellow students (called patient simulators) have been employed for such activities. Unless by sheer chance one of these volunteers does indeed have a particular mass or masses within his or her body which can be identified and used for training, he or she is likely to have a normal body and not offer any of the abnormalities which are required for experience for the trainee. The patient simulators are expensive and variable and as such draw continually on resources whilst while not providing particularly realistic training.

At page 2, please amend paragraph 0006 as follows:

The demands of training medical professionals are becoming more and more acute. Many countries need more doctors whilst while each doctor is being asked to work fewer hours. Fewer patients are spending time in hospital due to the increase of day surgery and minimal invasive surgical techniques. These factors lead to less and less opportunity for the medical trainee to experience any "hands-on" diagnosis at all, let alone in a repetitive way. Unfortunately, litigation is now common due to medical malpractice, and the need to be able to train students comprehensively in clinical diagnosis through palpation is pressing.

At page 2, please amend paragraph 0007 as follows:

In order to assist this difficult situation Clinical Skills Centres Centers have been set up within or by medical training institutions. These centres centers are growing in number worldwide, providing a safe environment to acquire "hands on" skills until competent. In most cases these centres centers have computer access and quite comprehensive training takes place.

At page 4, immediately before paragraph 0018, please insert the following heading at the left-hand margin:

Summary of the Disclosure

At page 4, please amend paragraph 0018 as follows:

According to a first aspect of the present invention disclosure there is provided a sensor in or for use in a medical training system, the sensor comprising:
simulation of a body structure, the body structure comprising at least one compartment for containing a mobile substance; and
sensing means for detecting pressure applied to the body structure.

At page 5, please amend paragraph 0022 as follows:

Such a sensor provides a useful tool for use in the training of palpation techniques. The sensor according to the present invention disclosure may be used to teach both internal and external manual palpation. The sensor may also be used in

the teaching of other medical techniques in which the pressure applied to a particular body structure must be monitored.

At page 5, please amend paragraph 0023 as follows:

One advantage of the present invention disclosure is that it is the body structure itself which acts as the sensor. This provides a more accurate representation of the pressure which individual body structures are subjected to during medical procedures. In the prior art medical training systems tactile sensors are placed on or within the body structures. Consequently, the present invention provides a more realistic means of sensing pressure since a force applied to any part of the body structure will be detected by the sensing means.

At page 5, please amend paragraph 0024 as follows:

A further advantage of the present invention disclosure is that a single body structure can be used to simulate a variety of medical conditions. The prior art systems are provided with a plurality of replaceable body structures, representing increasing levels of complexity. Using a sensor according to the present invention disclosure it is possible to vary the complexity of the situation using a single body structure.

Beginning at page 8, and continuing at page 9, please amend paragraph 0034 as follows:

According to a second aspect of the present invention disclosure there is provided a medical training system for diagnostic examinations performed on the human body by palpation comprising:

a simulation of a human anatomical structure, the anatomical structure having an outer surface and an internal cavity;

one or more sensors according to any preceding claim located within the internal cavity; and

a feedback presentation unit in communication with the pressure sensing for providing feedback to a user.

At page 8, please amend paragraph 0038 as follows:

According to a third aspect of the present invention disclosure there is provided a method of training examinations performed on the human body by palpation comprising the steps of:

receiving signals from the sensing means in a simulation of a human anatomical structure, wherein said signals are generated in response to palpation of the structure; and

providing feedback to a user, wherein said feedback derived, at least in part, from said signals.

Beginning at page 8 and continuing at page 9, please amend paragraph 0039 as follows:

The system according to the present invention disclosure may suitably be used in conjunction with EP 0 621 974 and EP 0 990 227, both of which are in the name of the present applicant. EP 0 621 974 relates to a simulation of body tissue comprising a member of elastomeric material overlying which is a simulated epidermis in the form of a relatively thin sheet comprising foam latex rubber. The simulated anatomical structure may suitably be covered with the simulated body tissue.

At page 9, immediately before paragraph 0041, please insert the following heading at the left-hand margin:

Brief Description of the Drawings

At page 9, please amend paragraph 0041 as follows:

For a better understanding of the present invention disclosure, reference will now be made to the accompanying drawings, in which:

Fig. 1 shows a perspective view of a simulated human torso;

Fig. 2 shows a schematic representation of a medical training system;

Fig. 3 shows a section view of a sensor within a simulated abdomen;

Fig. 4 shows a section view of the sensor of Fig. 3 representing a different medical condition;

Fig. 5 shows a view of a sensor in a first condition;
Fig. 6 shows a schematic representation of the sensor of Fig. 5.
Fig. 7 shows a view of the sensor of Fig. 5 in a second condition
Fig. 8 shows a schematic representation of the sensor of Fig. 7;
Fig. 9 shows a section view of a simulated testicle in a first condition;
Fig. 10 shows a section view of the simulated testicle of Fig. 9 in a second condition;
Fig. 11 shows a section view of the simulated testicle of Fig. 9 in a third condition; and
Fig. 12 shows a partially cut-away plan view of another simulated human torso.

At page 9, immediately before paragraph 0042, please insert the following heading at the left-hand margin:

Detailed Description of the Disclosure

At page 11, please amend paragraph 0046 as follows:

In Fig. 1 the training system 2 is in the form of a human torso 4. However, this is merely one embodiment of the invention disclosure and the system 2 may in fact be in the form of any human anatomical structure which may be subjected to palpation or any other medical procedure in which pressure applied to body structures must be monitored. The system 2 may be in the form of one or more of the following human anatomical structures: head, neck, shoulder, axilla, breast, torso, pelvis, knee, foot or other area of the human body. Each individual system 2 may be a stand alone module upon which specific examinations may be practised or it may be a modular unit which may be combined together with other units to form a single larger model. In an alternative embodiment the individual modules may be in the form of strap-on modules which may be worn by a human or manikin in order to increase realism, for example a strap-on breast. Similarly, the simulated internal body structures 12 may be in the form of any internal body structure which may be examined by palpation.

Beginning at page 4, and continuing at page 5, please amend paragraph 0020 as follows:

At the wort pan 1, a forced wort circulation 10 is furthermore provided, which comprises at least a pipe 11 and a preferably frequency-controlled pump 12. The pipe 11 emerges in the lower third in the area of the wort reservoir 3 from the side wall 2a of the container body 2, runs via pump 12 and if necessary via a control valve 12a (if the pump 12 is not frequency-controlled) and is passed back in the axial centre center regarding the internal boiler 4 through the base 2b of the container body 2. The pipe 11 continues vertically upwards in the inside of the container body 2 as a riser. If the forced flow 10 contains several pipes 11, these are taken via a common pump and if necessary a common control valve into a common riser. The riser contains a first pipe subsection 11a, which runs vertically upwards from the intake of the pipe 11 into the container body 2 through the heat exchanger 5, and a second pipe subsection 11b connected to it, which projects beyond the heat exchanger 5 and goes through the remaining internal boiler 4, i.e. the accumulation cone 6 and the guiding screen 8 and projects beyond the guiding screen 8. Here, the second pipe subsection 11b is open on the end to form an outlet opening 13 which is essentially horizontal.

At page 5, please amend paragraph 0021 as follows:

Above the outlet opening 13, a guide device 14 is located with a baffle surface 15 facing downwards. The baffle surface 15 dips into the outlet opening 13 or begins there, near the axial centre center of the outlet opening 13 and rises from there, gently curved at an angle upwards and outwards, whereby the curve of the baffle surface 15 is formed in such a way that near to the outlet opening 13 the axial parts of the curve predominate, but that these decrease in the further course of the curve, until the radial parts of the curve predominate. In the outer edge region of the guide device 14 at its greatest radial distance from the centre line, the curve can show axial parts again, i.e. the outer edge of the baffle surface 15 can be slightly curved downwards again. Preferably, the baffle surface 15 can be formed as a rotation surface of a hyperbola- or parabola-type curve section.

At page 7, please amend paragraph 0026 as follows:

During the operation of the wort pan 1 according to the invention disclosure, the internal boiler 4 of the wort reservoir 3 is heated, whereby the heating in the heat exchanger 5 ensures a first cycle of the wort 3 along the arrows 9. At the same time, through pump 12 and one or preferably several pipes 11 leading out of the container body 2, wort is sucked for a second cycle along the arrows 16 and pushed into the riser. Because the pipe subsection 11a runs through the heat exchanger 5, the flow caused by the pump is overlaid by a flow of heat, so that the wort is pushed with increasing energy through the infeed device 18, where in addition wort is sucked in above the heat exchanger 5. Subsequently, the pumped and sucked in wort is passed through the outlet opening 13 with reduced cross-section against the baffle surface 15 and taken from there back into the wort reservoir 3 distributed in a bell with a low layer thickness.

At page 7, please amend paragraph 0027 as follows:

Fig. 3 shows a further embodiment of a wort pan 1' formed according to the invention disclosure, which corresponds to the wort pan 1 in Figs. 1 and 2 apart from the details described in the following, so that these do not need to be explained again.

At page 8, please amend paragraph 0030 as follows:

As a modification of the described and drawn embodiment, the invention disclosure can be used with wort pans of any structural design, working unpressurised or under pressure and with any known construction of an internal boiler but also, for example, with heated forward flow containers or similar.